

**REMARKS**

Reconsideration of this application, as amended, is respectfully requested.

Claims 1, 2, 4 and 7-10 are currently pending. Claims 3, 5 and 6 have been cancelled and Claims 7-10 are newly presented for examination. Claim 1 has been amended to conform to U.S. practice and to positively recite elements of the device, including that the plates resistant to high temperature are "fixed to the surface of the mould by means of underpressure," the subject matter of former Claim 3, which has been cancelled. Claims 2 and 4 have been amended to replace "characterized in that" with --wherein--, in accordance with U.S. practice.

New Claim 7 recites a casting mould wherein "cooling pipes are arranged within a base plate of the casting mould to provide cooling of the casting mould." Support for this claim is found throughout the Specification and Drawings as filed, for example, in the Specification at page 3, lines 30-32 and in Figures 1 and 2.

New Claim 8 recites a casting mould wherein "cooling pipes are additionally arranged within side and end walls of the casting mould to provide cooling of the casting mould." Support for this claim is found throughout the Specification and Drawings as filed, for example, in the Specification at page 3, lines 30-32.

New Claim 9 recites a casting mould "comprising a cope to retain a layer of shielding gas over the surface of the mould, which layer prevents excessive oxidation of molten material when the molten material is poured into the mould." Support for this claim is found throughout the Specification and Drawings as filed, for example, in the Specification at page 2, lines 26-28; and at page 4, lines 6-8.

New Claim 10 recites a casting mould “comprising inserts placed into the cavity of the mould, the inserts being resistant to high temperatures and serving to create a corresponding negative shape in the cooling element to be cast .” Support for this claim is found throughout the Specification and Drawings as filed, for example, in the Specification at page 3, lines 17-19; page 4, lines 10-14; former Claim 6; and Figure 2.

Former claim 6 has been objected to as being in improper dependent form for failing to further limit the subject matter of former Claim 5, from which it had depended. The Office Action argued, “the method for manufacture of the element cannot be relied upon to fairly limit claims to the apparatus itself.” As mentioned above, former Claim 6 has been cancelled, thus rendering moot the grounds for this rejection. the subject matter of this claim has been incorporated into new Claim 10. New Claim 10 is directed to the mold for making the cooling element, not to the cooling element itself, and thus is believed to be in proper dependent form.

Former Claims 5 and 6 have been rejected under 35 U.S.C. §102(b) as being anticipated by Great Britain Patent No. 1,424,532 to Widmer. Claims 5 and 6 have been cancelled, thus rendering moot the grounds for this rejection.

Claim 1, as amended, is directed to a casting mould formed of base, wall and end plates for manufacturing a pyrometallurgical reactor cooling element, the casting mould made of copper plates is at least partly equipped with cooling pipes, the mould being lined on the inside with plates resistant to high temperatures, the plates resistant to high temperatures being fixed to the surface of the mould by means of underpressure.

Former Claims 1-4 have been rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 3,763,302 to Duchenoy et al. Duchenoy et al. describe a

mould for preparing bricks that "comprises a movable bottom 1, surmounted by a refractory plate 2 made of graphite, and four lateral walls 4,5,6,7. These walls, relatively thick, are made of electrolytic copper. They are pierced by channels 8, in which is circulated a cooling liquid such as water...." See Duchenoy et al., column 4, lines 52-57.

Duchneoy et al. describe a mould having only one refractory plate (a bottom plate (2)) mounted on top of a movable bottom (1). Duchneoy et al. do not teach or suggest a specific material for the movable bottom (1) that is underneath the bottom plate (2). That is, Duchneoy et al. do not teach or suggest a copper plate lined with a graphite plate, as claimed in amended Claim 1. Moreover, neither the Specification of Duchneoy et al., nor Figure 1 thereof, teaches or suggests that the copper walls of the mould of Duchneoy et al. are plated or lined with graphite. Duchneoy et al. do not teach or suggest lining copper plates with refractory plates, much less fixing such refractory plates to the copper to the surface of the copper plates by means of underpressure, as recited in amended Claim 1. In sum, Duchneoy et al. do not teach or suggest "a casting mould ... made of copper plates is at least partly equipped with cooling pipes, the mould being lined on the inside with plates resistant to high temperatures, the plates resistant to high temperatures being fixed to the surface of the mould by means of underpressure," as now claimed in amended Claim 1.

For the above reasons, amended Claim 1 defines patentable subject matter over Duchenoy et al.. Claims 2 and 4 depend from Claim 1 and therefore also define patentable subject matter over Duchenoy et al. Claim 3 has been cancelled, thus rendering moot the grounds for the rejection of this Claim. Withdrawal of the rejection applied to former Claims 1-4 under 35 U.S.C. §102(b), as being unpatentable over Duchneoy et al. is respectfully requested.

Former Claims 1-4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Great Britain 1,386,645 to Outokumpu Oy ("GB 1,386,645"), in view of U.S. Patent No. 4,252,178 to Hudd ("Hudd"). GB 1,386,645 relates to a cooling element and a cooling pipe thereof, and its position, et cetera. There is no teaching or suggestion that the mould is cooled or that it is lined with a material resistant to high temperatures which is attached by means of underpressure, as recited in amended Claim 1.

Hudd relates to a continuous casting slab mould. Hudd states, "Continuous casting moulds are, of course, totally different from ordinary moulds, in which metal is poured into the mould to fill it and solidification takes place within the mould." See Hudd, column 1, lines 18-21. The mould body described by Hudd is made of copper and the surfaces facing the melt are covered with graphite slab liner members (15). The graphite liner (15) is held against the copper body by means of springs (20) and bolts (17). The bolts (17) attach to the graphite liner (15) by means of blind holes (16). The bolts pass through corresponding holes (18) in the copper body (1) and are provided with nuts (19) that compress coil springs (20) and pull the graphite liner (15) firmly into contact with the copper body (1). Hudd is not equipped with cooling pipes, and the lining of Hudd is not fixed by means of underpressure, as claimed by applicants in amended Claim 1.

Thus, GB 1,386,645 and Hudd, alone or in combination, do not teach or suggest "a casting mould ... made of copper plates is at least partly equipped with cooling pipes, the mould being lined on the inside with plates resistant to high temperatures, the plates resistant to

high temperatures being fixed to the surface of the mould by means of underpressure," as claimed in amended Claim 1.

For at least this reason, Claim 1, as amended, defines patentable subject matter over GB 1,386,645 and Hudd, alone or in combination. Claims 2 and 4 depend from Claim 1 and therefore also define patentable subject matter over GB 1,386,645 and Hudd, alone or in combination. Claim 3 has been cancelled, thus rendering moot the grounds for the rejection of this Claim. Withdrawal of the rejection applied to former Claims 1-4 under 35 U.S.C. §103(a) as being unpatentable over GB 1,386,645 and Hudd is respectfully requested.

### CONCLUSION

In light of the foregoing, applicants respectfully submit that Claims 1, 2, 4 and 7-10, as amended, define patentable subject matter over the cited art, alone or in combination. An early allowance of all claims is earnestly solicited.

Respectfully submitted,



Michael J. Pollack  
Israel Blum  
Registration No. 26,710

Dated: July 28, 2003

Correspondence Address:  
MORGAN & FINNEGAN, L.L.P.  
345 Park Avenue  
New York, NY 10154-0053  
(212) 758-4800 Telephone  
(212) 751-6849 Facsimile

Michael J. Pollack  
Registration No. 53,475